

Is Decision-Making For Health Care Related To Health Facility Delivery Among Married Women In Uganda? Analysis From DHS 2016

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Abstract

Background Most maternal and neonatal deaths occur in low and middle incomes, and more than half takes place within the first day of birth. These deaths could be prevented if delivery was attended to by skilled health professionals in the health facilities. Empirical studies have reported several factors associated with low facility-based delivery. Limited literature is available on the relationship between women autonomy and health facility delivery in Uganda. This study aims to establish the relationship between decision-making for health care and health facility delivery among married women in Uganda.

Method: The data used for the cross-sectional study was from the Uganda Demographic Health Survey 2016. The study used a sample of 1541 women who gave birth within five years before the survey. Proportions, odds ratio and 95% confidence interval were used to estimate the health facility delivery for each independent variable using the level of significance of $p < 0.05$. Binary logistics regression was used to calculate the odds ratio for the different variables.

Results: 49% of the women could decide by themselves to seek care. Although 94% of the women attended ANC during the last pregnancy, only 75% of the married women delivered their most recent child in the hospital/health facility. There was regional variation for facility-based delivery (Western AOR 0.441, CI 0.285-0.684; Eastern 0.568, CI 0.395-0.816; Central 0.587, CI 0.361-0.952). Older women are less likely to deliver in a health facility compared to younger ones (25-29years AOR 0.559, CI 0.356-0.877; 30-34years AOR 0.530, CI 0.342-0.823, 35-39years AOR 0.406, CI 0.252-0.652; 40-44year AOR 0.569, CI 0.345-0.938; 45-49years AOR 0.485, CI 0.288-0.814). Women who were aged 20-29years were more likely to deliver in a health facility (AOR 1.55 CI 1.141-2.109). Women in the middle, richer and richest wealth index have higher odds of delivering in the hospital compared to women in the poorest wealth index (Middle AOR 1.544, CI 1.053-2.264; richer AOR 1.863, CI 1.211-2.866; Richest AOR 4.104, CI 2.051-8.213). Women who do not have problems with transport are more likely to deliver in the hospital (AOR 1.503, CI 1.168-1.935).

Conclusion: Decision-making for health has no association with health facility delivery. The factors associated with health facility delivery among married women were the current age of the woman, age of the woman at the birth of the first child, distance to the facility, wealth, region and place of residence. The government needed to develop strategies that will improve health facility distribution per capita, invest in infrastructure that will reduce the distance to the health facility, invest in projects that will improve wealth index and carry out health promotion targeting older women and considers geographical variations.

Introduction

Most maternal and neonatal deaths occur in low and middle incomes, and more than half takes places within the first day of birth [1, 2]. In Uganda, the maternal mortality rate is 375 deaths per 100,000 people [3]. These deaths are usually from complications that are preventable when attended to by skilled health professionals[4]. Health workers can prevent approximately 16–33% of all maternal death by offering a

safe and life-sustaining environment for both the mother and the baby [5]. In Eastern Africa, only 67% of childbirth are attended to by skilled health workers, and in Uganda, three-quarters of the births take place in health facilities with the help of skilled health professionals [5, 6]. The main barriers to accessing quality care for delivery is three-fold, barriers related to seeking care, barriers related to accessing the facility and receiving care when the mother is at the health facility. Governments across Sub-Saharan Africa have put a concerted effort to increase deliveries in facilities and reduce maternal mortality. This is a drive for these countries to reduce maternal mortality rate to the 70 death per 100,000 persons targets set by the United Nation's Sustainable Development Goals before 2030 [7].

Empirical evidence has highlighted several barriers to low utilization of health facility for childbirth. Health facility delivery is influenced by socioeconomic, cultural and health system-related factors [8, 9]. Socio-economic factors associated with health facility delivery in low-income countries include age, level of education, the type of residence and wealth index [10–12]. Study have noted that younger and first time mothers prefer to deliver in the hospitals and, as the parity increase, most of the women gain the confidence of childbirth experience and opt to deliver away from the hospital. The more educated women were more likely to deliver their babies in the health facility. This finding was similar in women living in the urban areas and those coming from more wealthy households. In Zambia, the high out-of pocket expenditure was reported to be the factor driving away women from delivering in the Hospital [11]. Socio-economic factors usually influenced the health-seeking behavior of mothers, one of the three barriers to using health facility for childbirth.

Health systems barriers remained important determinants of access and availability of quality services to the mothers during childbirth [5, 6]. Antenatal Care services (ANC) [13], distance to the nearest health facility [14, 15], availability of trained health professionals, health infrastructure and technologies are health systems related issues required for perinatal care [16, 17]. In Uganda, the government has invested in both human and health infrastructure at the primary care level to ensure that quality perinatal services are provided to mothers to facilitate childbirth. The Uganda Health Sector Strategic plan 2015–2020 projected that by the end of the five years, 85% of Ugandan will be within a 5km radius from the nearest health facility [15]. Dowhaniuk [15] noted that in 2020, 71.73% of Ugandans are within one hour walk to the nearest health centre II. These levels of health facility, is not designed to handle deliveries and only refer mothers for childbirth to a higher level of care.

The sociocultural influence limits the autonomy of women to contribute or decide on matters of the society especially, health, financial and household issues [9, 18–21]. Most studies noted that lack of autonomy and cultural norms that encourage and support home delivery negatively affects health facility delivery. [4, 18, 22–24] [25]. The decision to seek care in the health facility by pregnant women is often influenced by permission from the husband and relatives. Most women fear to go against husband or partners for fear of social isolation. Uganda have embarked on several projects that empower women to be financially independent and to enable them to make independent decision to seek care. They include interventions that delay childbirth and keeping girls in schools, discouraging job discrimination and job

creation for women. Education and financial independence are believed to encourage women to take up facility delivery.

Ideally, married women are expected to experience greater socio-cultural influence on autonomy compared to women who are not in a relationship. Literature on the effect of the decision to seek health care and uptake of health facility delivery by married women in Uganda is limited. This study aims to identify the magnitude of health facility delivery and determine the relationship between the decision to seek health care and institutional delivery. The aim is to improve the current policies and practice and strengthen the uptake of health facility delivery.

Goal

To understand the relationship between decision-making for health care and health facility delivery among married women in Uganda.

Specific Study Objective

- To determine the prevalence of health facility delivery in Uganda
- To determine the relationship between decision-making for health care and facility based delivery among married women in Uganda

Method

Data source

The data used in this cross-sectional study was from the Uganda Demographic Health Survey (DHS) 2016. The DHS is a nationally representative cross-sectional survey that takes place every half a decade. A representative sample of 20,880 households was obtained using a multi-stage cluster survey design and, the information came from self-reports using a survey questionnaire[26]. The questionnaires were adapted to reflect the population and health issues relevant to Uganda. In this study, we used the data from the couples module for women of reproductive age from 15-49years and, a review of each birth history[27]. We used a nationally representative sample of 1541 married couples in 2016

Description of the variables

The sample description was adopted from Dunlop, Benova [25], Married women of reproductive age who have given birth in the 5years period preceding the survey were included in the analysis. The independent variable was the decision to seek health care by the mother which was labelled as 'person who should have a greater say on the responders' health care'. Descriptive analysis was performed using the categorical variable which was classified into *respondent alone*, *respondent and wife/partner*, and *wife or partner alone*. The observations in the category of *'someone else'* and *'other'* was merged with the category *'wife or partners alone'* due to extremely small number of respondent. "*Respondent alone*" was

used as a base category in the crude and adjusted analysis to compare the relationship of category respondent and wife/partner and wife or partner alone on health facility-based delivery.

The outcome variable was 'place of birth for the most recent child', which is a binary variable of place childbirth and, is categorized into 'hospital, health facility' or 'other' [28].

The other covariates included the age of the mother at birth of the most recent child, which was categorized into groups of 10years starting from 10-19years, 20-29years and 30-39years. Women in age 40years and more were merged with those in the category 30-39years of age. The age of the mothers at the time of the study was categorized into the group of 5years. The mother and father's level of education (those who did not know their level of education were merged with those who has no education) was classified as no education, primary, secondary and higher. Due to the many categories of religion, it was reclassified into Anglican, Catholics, Muslims and Pentecostal. The other categories were merged with the closely related group basing on practices and literature. The region was also reclassified into the five cardinal geographical locations in Uganda. They included Northern, Southern, Eastern, Central and Western. The type of residence described as being located in an urban or rural area. Distance to the facility to seek medical care for the mother was categorized as a 'big problem' and 'not a big problem'. Need for family planning was labelled as *ever used anything or tried to delay or avoid getting pregnant* and the response was 'yes' or 'no'. 'Wealth index combined' was categorized as poorest, poorer, middle, richer and richest. The wealth index described the asset index quintile that the coupled fall into, comparing their asset ownership to the Ugandan population. Finally, 'ANC uptake' described if the woman accessed any ANC services during the last pregnancy. ANC uptake was asked in DHS only for the latest birth in the survey recall period, that is, if the woman had more than one birth in the recall period, this variable was only available for the most recent birth. Women who could not recall the ANC were merged under the category of women who have not gone for ANC.

Statistical Analysis and model estimation

Univariable analysis.

The data were subjected to a descriptive and inferential analysis using the Statistical Package of STATA® version 16 (StataCorp LLC, Texas USA). We used the chi-squared test to compare the categorical variables using the level of significance of p-value < 0.05. Descriptive statistics including, percentages and frequencies, was used to provide an account of the study findings. Meaningful patterns were identified from the summarized data to give further insight into the multivariable analysis.

Multivariable analysis

Binary logistics regression was used to analyses the data because the outcome variable is binary taking on the value of one, if the mother delivers in the hospital/health facility or zero otherwise. Odds ratio and 95% confidence interval of health facility delivery were estimated for each independent variable using level of significant of $p < 0.05$. Delivering in places other than the hospital was the base category and

compared with delivery in the hospital/health facility. In this study, we estimated the maximum likelihood for the odds of places of childbirth in relation with decision to seek health care while holding other variables constant.

The place of birth for the most recent child for a woman i was modelled as a function of a vector of decision to seek health care (X^d) and a vector of covariates (X^s) relating to health systems, socioeconomic and social factors influencing health facility delivery so that;

$$Y_i = f(X^d, X^s, \varepsilon_i)$$

Where Y_i is the dependent variable taking a value of one if a woman delivers in the hospital/health facility and value of zero otherwise and ε_i is the stochastic error term. The logistics regression model assumes that the logit of the probability P_i follows a linear model and defined $P_i = P(Y_i = 1)$ as the probability that a woman i delivers at the hospital/ health facility. The probability P_i depends on a vector of observed covariates so that

$$P_i = f(x_i' \beta)$$

Where $f(\cdot)$ is the logistic cumulative distribution function (i.e. $(x_i' \beta) = \left(\frac{e^{x_i \beta}}{1 + e^{x_i \beta}} \right)$), β is a vector of regression coefficients and a vector x_i' including the X^d and X^s . Estimation of $\hat{\beta}$, unbiased estimates of the model coefficients β and it can now be demonstrated that

$$x_i' \beta = \text{logit}(P) = \ln \left(\frac{P}{1 - P} \right)$$

So that the estimated probability of place of delivery \hat{P}_i can be estimated for each patient using $\hat{\beta}$ and appropriate values for x_i'

The model for the study was simulated using three multivariable models built through a forward stepwise approach. The First model includes main independent variable and the couples' demographic characteristics; age at birth of first child, current age at the time of the study, level of education of the mother and father, religion, region and the residence for the mother. The second model included the household combined wealth index. The last model incorporated the independent variables associated with health facility delivery which included ANC visit, distance to seek care, family planning used.

Results

Descriptive statistic

Table 1, (refer to appendix one) presents sample descriptive statistics for the categorical variables considered in the analysis. 75% of the women delivered their most recent children in the hospital/health

facility. 49% of the respondent could decide by themselves to seek healthcare, 36% has to seek care after a joint decision with the partner and, 15% of the women, their partners were responsible for the decision to seek care by the respondent. 94% of women attended at least one ANC visit during their most recent pregnancy. 69% of the women were using modern contraceptive before their most recent pregnancy. Most women (57%) reported that distance to the health facility when seeking care for themselves was not a big problem. 93% of the women give birth to their first child before the age of 30years of age. The majority of the couples attained a primary level of education (mother 60% and father 58%) and 84% of the women are located in urban areas. Further detail of comparative sample descriptive statistics for facility delivery can be obtained from appendix two.

Table 1
showing the description of the characteristics of health facility delivery in Uganda.

Variable	Definition	Observations(n = 1541)	% (100)
Dependent Variable			
hosp	= 0 if mother delivers in other place	384	24.65
	= 1 if mother delivers in hospital, health facility	1174	75.35
Independent Variables			
decision	= 1 respondent alone	759	48.72
	= 2 if respondent and wife/partner	564	36.20
	= 3 if wife/partner alone	235	15.08
Wealth	= 1 if poorest	407	26.12
	= 2 if poorer	342	21.95
	= 3 if middle	308	19.77
	= 4 if richer	283	18.16
	= 5 if richest	218	13.99
motherage	= 1 if current age of mother is 20–24 years	207	13.29
	= 2 if current age of mother is 25–29 years	324	20.80
	= 3 if current age of mother is 30–34 years	393	25.22
	= 4 if current age of mother is 35–39 years	238	15.28
	= 5 if current age of mother is 40–44 years	209	13.41
	= 6 if current age of mother is 45–49 years	187	12.00
age1cat	= 1 if age at birth of first child is 10-19years	283	18.16
	= 2 if age at birth of first child is 20–29	1166	74.84
	= 3 if age at birth of first child is 30–39	109	7.00
fathereduc	= 0 if no education	137	8.79
	= 1 if primary	905	58.09
	= 2 if secondary	374	24.01
	= 3 if higher	142	9.11
motherseduc	= 0 if no education	93	5.97

Variable	Definition	Observations(n = 1541)	% (100)
	= 1 if primary	938	60.21
	= 2 if secondary	361	23.17
	= 3 if higher	166	10.65
Residence	= 0 if rural	244	15.66
	= 1 if urban	1314	84.34
relcat	= 0 if Anglican	522	33.87
	= 1 if Catholics	629	40.82
	= 2 if Muslims	199	12.91
	= 3 if Pentacostal	191	12.39
Region	= 1 if Northern	337	21.63
	= 2 if Central	281	18.04
	= 3 if Eastern	539	34.60
	= 4 if Western	242	15.53
	= 5 if Southern	157	10.21
ancvisit	= 0 if no	92	5.91
	= 1 if yes	1466	94.09
usefp	= 0 if no	484	31.07
	= 1 if yes	1,074	68.93
Distance	= 0 if distance to Health facility is a big problem	668	42.88
	= 1 if distance to health facility is not a big problem	890	57.12

Multivariable regression analysis

From the analysis, the odds of delivering in a health facility is 0.956 times (CI 0.726–1.260) lower for women who decide to seek health care after a joint decision with the partner compared to those who make their own decision, when holding other factors constant. The odds of delivery in a health facility is 1.125 times (CI 0.777–1.629) higher for those whose partner decides for them when to seek health care compared to women who make their decision to seek care. The relationship is, however, not statistically significant ($p = 0.752$ and $p = 0.532$ respectively). Women who first gave birth at age 20–29 years have higher odds of delivering in the health facility compared to those that are below 19 years (AOR 1.55, CI 1.141–2.109). Generally, at any age above 24 years, the odds of delivering in the hospital is lower

compared to women age of 24years and below (25-29years AOR 0.559, CI 0.356–0.877; 30-34years AOR 0.530, CI 0.342–0.823, 35-39years AOR 0.406, CI 0.252–0.652; 40-44year AOR 0.569, CI 0.345–0.938; 45-49years AOR 0.485, CI 0.288–0.814). Women living in the urban areas had lower odds of delivering in the hospital compared to those in the rural areas (AOR 0.586, CI 0.358–0.959). Women in the middle, richer and richest wealth index had higher odds of delivering in the hospital compared to women in the poorest wealth index (Middle AOR 1.544 CI 1.053–2.264; richer AOR 1.863 CI 1.211–2.866; Richest AOR 4.104 CI 2.051–8.213). Married women from Central, Eastern and Western regions had lower odds of delivering in the health facility compared to women coming from Northern Uganda (Western AOR 0.441, CI 0.285–0.684; Eastern 0.568, CI 0.395–0.816; Central 0.587, CI 0.361–0.952). The odds of a woman delivering in the health facility was 1.641 times (CI 1.004–2.683) higher for women who attend ANC compared to those who do not. Women who reported that distance to the facility to seek care for themselves was not a big problem had higher odds (AOR 1.503, CI (1.168–1.935, $p = 0.002$)) of delivering in the hospital/health facility compared to those who reported that distance to the health facility is a big problem. More details of the relationship in the three multivariable regression analysis is available in the appendix three.

Table 2

Adjusted odds ratio between decision-making for health care and health facility delivery, adjusting for all factors

Independent variable	Place of Birth of the most recent child (AOR)	95% CI	P-value
2.decision	0.956	0.726–1.261	0.752
3.decision	1.125	0.777–1.629	0.532
2.age1cat	1.552***	1.141–2.110	0.005
3.age1cat	1.651	0.913–2.986	0.097
2.motherage	0.559**	0.356–0.877	0.011
3.motherage	0.530***	0.342–0.823	0.005
4.motherage	0.406***	0.252–0.653	0.000
5.motherage	0.569**	0.345–0.938	0.027
6.motherage	0.485***	0.288–0.814	0.006
2.relcat	1.041	0.779–1.391	0.787
3.relcat	1.387	0.890–2.163	0.148
4.relcat	0.916	0.615–1.364	0.665
1.fathereduc	0.806	0.491–1.324	0.394
2.fathereduc	0.853	0.445–1.635	0.631
3.fathereduc	0.957	0.348–2.634	0.932
1.motherseduc	0.537	0.288–1.002	0.051
2.motherseduc	0.763	0.358–1.628	0.484
3.motherseduc	0.861	0.314–2.363	0.771
2.residence	0.586**	0.358–0.959	0.034
2.region(Central)	0.587**	0.361–0.953	0.031
3.region(Eastern)	0.568***	0.395–0.816	0.002
4.region(Western)	0.442***	0.285–0.685	0.000
5.region (Southern)	0.599	0.358–1.004	0.052
2.wealth	1.133	0.804–1.595	0.476
3.wealth	1.544**	1.053–2.264	0.026

Notes Titles: Standard errors in parentheses*** p < 0.01, ** p < 0.05, * p < 0.1

Independent variable	Place of Birth of the most recent child (AOR)	95% CI	P-value
4.wealth	1.863***	1.211–2.866	0.005
5.wealth	4.104***	2.051–8.214	0.000
ancvisit	1.642**	1.004–2.684	0.048
usefp	1.269	0.970–1.659	0.083
distance	1.503***	1.168–1.935	0.002
Constant	5.491***		
Observations	1,541		
Notes Titles: Standard errors in parentheses*** p < 0.01, ** p < 0.05, * p < 0.1			

Likelihood-ratio test LR chi2 (3) = 17.18

(Assumption: m1 nested in m2) Prob > chi2 = 0.0006

Discussion

Most maternal mortality usually occurs within the first day of childbirth and from complications that are preventable when attended to by health workers. In Uganda, these skilled health professionals are located in health facility/hospitals. Despite the availability and free access to perinatal care services, a quarter of women in Uganda still deliver outside the hospital/health facility. In this study, the determinants for health facility delivery were the current age of the mother and age at birth of the first child, ANC, wealth, distance to the facility when seeking health care for self and geographical location in Uganda. The decision to seek health care for the mother was not associated with health facility utilization, contrary to the reports in the literature.

Decision making for childbirth is a complex process that often involves several people and includes barriers like cost, distance and social issues to overcome. Empirical studies have reported lack of decision-making autonomy regarding childbirth, and the dependence of women on their husbands and family members to decide on place of birth as one factor influencing health facility delivery in Uganda and other low-income countries [9, 17, 29, 30]. Our study counters these finding and found no relationship with health facility delivery among married women in Uganda. Further, Parkhurst, Rahman [22] noted that married women in Uganda reported that their husbands supported them through the pregnancy process and put aside funds to meet the finances needed for childbirth. Uganda currently uses strategies that promote health facility delivery by involving men in the childbirth process and discouraging home birth through Traditional Birth Attendants (TBA) [6, 31]. Instead, the TBAs are tasked to create awareness and provides linkage between the community and health facility. Men/spouse and TBAs appreciate the importance of health facility delivery are now more involved in the process.

From the analysis, most women who did not deliver in the hospital, visited it at least once for ANC (94%). The findings agree with other studies which demonstrated that attending ANC and not having a problem with distance to the health facility as factors that promote health facility delivery [32]. According to Dowhaniuk [15], seven in every ten Ugandans are within an one hour walk from the nearest health facility. With the beginning of labor, it is impractical for a woman to walk to the nearest facility. These women may be unable to deliver in the health facility because of distance that they have to cover. Some families in Uganda have resorted to putting money aside to provide transport to facilitate travel for childbirth. The Government need to invest more in health infrastructures that will enable easy access to care when needed for safe delivery in the health facility.

The study noted that most women, older than 25years are less like to deliver in the health facility compared to youths and adolescents below 25years. Although, for their first birth, women aged 20-29years are likely to deliver in the health facility compared to younger teenagers[27]. It shows that when women grow older and after their first childbirth experience, most of them become confident of the process and opt to deliver at home [33]. The decision become pronounced when distance or financial barriers to health facility delivery[19].

Although facility delivery is free of charge in all public health facilities in Uganda, women have to meet the indirect cost for transport and procurement of baby clothes/blanket and other essential supplies. This out-of-pocket expenditure cost approximately one-third of household expenditure [11]. This high out of pocket expenditure probably explains why women in the middle, richer, and richest wealth index are more likely to deliver in health facilities compared to those of the poorest women in Uganda [34]. The government of Uganda introduced a clean delivery kit referred to as “Mama Kit” to incentivize women to deliver in the health facility[35]. Although this has produced a positive effect, the intervention is not cost-effective for the government to sustain [36]. Investing in projects that will empower women and families to meet the out-of –pocket expenditures will encourage more facility based delivery.

The study demonstrated geographical variation in health facility delivery in Uganda, with women from Central, Eastern and Western being less likely to deliver in a health facility compared to women coming from the Northern region. The variation because of the distribution of health facility where greater facility-based delivery is noted in districts with more health facilities per capita, more road infrastructure and a higher wealth index[33]. Further, the Eastern region is facing greater inequity compared to other regions in the country. More research is required to identify the inequalities and develop more targeted policies to address equity issues in access and availability of health services that directly impact health facility delivery [37].

Due to lack of data, we did not explore the relationship between quality of care at the health facility and the cost of transport that could have influenced the outcome of the findings. Better quality of care and may improve access will encourage more women to deliver in the health facility. Issues of transport cost and affordability could be explored in further research to give a better understanding of access to a

health facility during childbirth. We assumed that the variables are independent, although the couples' data include other clusters. The results obtained are a pooled effect.

Conclusion

This study has demonstrated that decision to seek care among married women in Uganda is not related to health facility delivery. The factors associated with facility-based delivery can include the current age of the mother and age at birth of the first child, ANC, wealth, distance to the facility when seeking health care for self and geographical location in Uganda. The government needs to develop policies that will increase the distribution of health facility per capita, expand infrastructure and wealth index with special attention to the geographic variations in the country. Most health promotion and campaigns on the dangers of obstetric complication should target older women.

Abbreviations

ANC Antenatal Care ; AOR Adjusted Odds Ratio; CI Confidences Interval; DHS Demographic Health Survey ; MoH Ministry of Health ; SDG Sustainable Development Goals; WHO World Health Organization

Declarations

Ethics approval and consent to participate: Not applicable .

Consent for publication

The author hereby consent for the above mentioned topic to be published at BMC Pregnancy and Childbirth

Availability of data and materials:

The dataset was compiled from databases provided by the DHS programme;
[https://www.dhsprogram.com/ Data/](https://www.dhsprogram.com/Data/)

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

The author conducted the literature search, data analysis and wrote draft of the manuscript.

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